Proposed New Efficiency Equations for Metal Halide Ballasts

Dec. 12, 2005

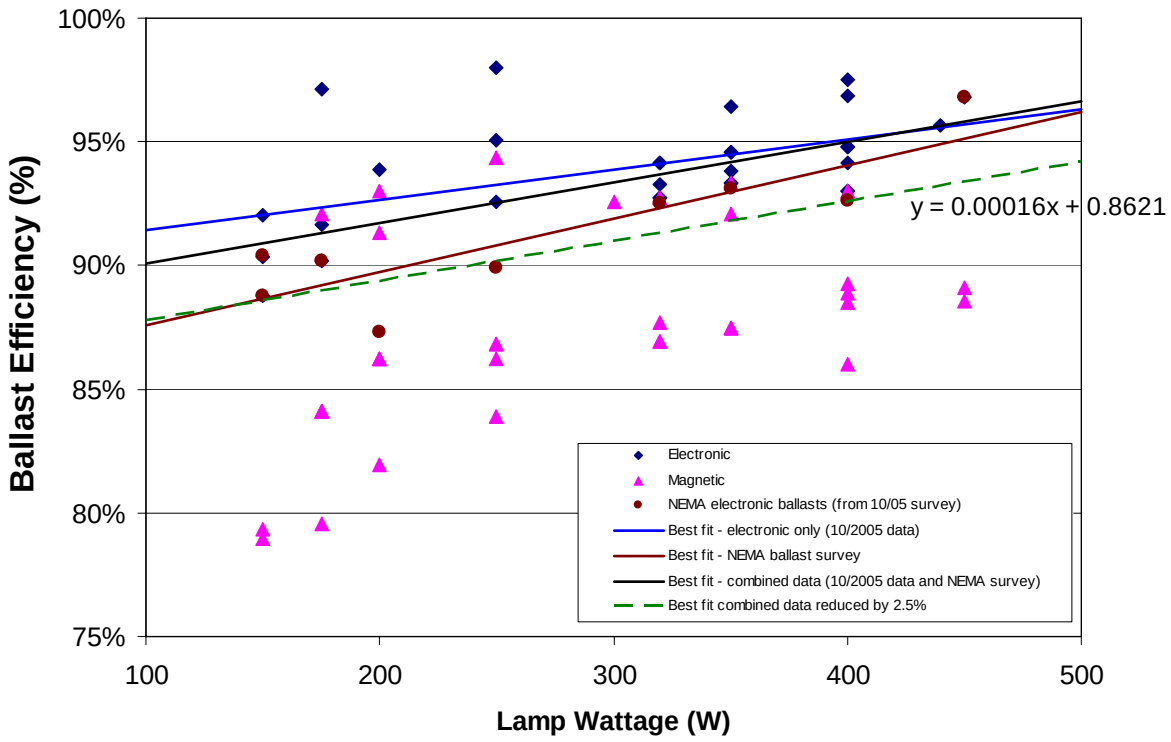
Earlier this week NEMA provided information on metal halide ballast efficiencies. This included information from six companies, including four who currently sell electronic ballasts for metal halide lamps. NEMA does not report data on all products but instead, according to NEMA, "the figures are based on the product having the maximum input wattage as submitted by the ballast companies." In general, ballasts with the maximum input wattage will have the lowest efficiency, hence the NEMA data will generally provide information on ballasts that are at or near the lowest efficiency for a given lamp wattage.

In the fall of 2005, ACEEE collected data on electronic ballasts from six manufacturers, including three not in the NEMA compilation. The ACEEE data was provided to CEC just prior to the Oct. 26, 2005 CEC workshop and discussed at this workshop. Thus, while there is some overlap between the NEMA and ACEEE data, there are also some data points unique to each dataset.

In order to provide a useful foundation for making recommendations, ACEEE combined its dataset (as presented at the Oct. 26, 2005 workshop) with the NEMA electronic ballast data. We then plotted a best-fit line for the different data sets – ACEEE's, NEMA's, and the combined data set. Finally, as was done in the 2004 CASE study on these products, we modified the combined best fit line to produce a line that allows most but not all electronic products to be in compliance. Specifically, we took the best fit line for the combined data set and multiplied by 97.5% (i.e. we reduced the slope and intercept each by 2.5%). This analysis is shown in the graph below. Based on this analysis, we recommend that the standard for metal halide fixture ballast performance be as follows:

Minimum ballast efficiency = (0.00016*Lamp Watts) + .86

As with the CEC proposal presented at the Oct. 26, 2005 workshop, this standard would take effect Jan. 1, 2008 for fixtures rated for lamps of 150-200 Watts, and Jan. 1, 2009 for fixtures rated for lamps of 201-500 Watts.


100%
95%
90%
85%
80%
75%
100
200
300
400
500
Ballast Efficiency (%)
Lamp Wattage (W)
y = 0.00016x + 0.8621
Electronic
Magnetic
NEMA electronic ballasts (from 10/05 survey)
Best fit - electronic only (10/2005 data)
Best fit - NEMA ballast survey
Best fit - combined data (10/2005 data and NEMA survey)
Best fit combined data reduced by 2.5%